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ABSTRACT

The 1973 remodeling of the Emmanuel Mounier Lycee in Grenoble, France, shows how a secondary educational facility can respond to expanding school offerings. As background to the lycee's expansion, the author, who was principal of the school during its remodeling, provides general information on the French educational system and on the consequent design and use of school buildings in France. The general information includes an overview of educational tracks in elementary and secondary schools, an analysis of the age and use of floor space in common school buildings, and the rationale behind the program of remodeling facilities. The second part of the report focuses on educational facilities and needs in Grenoble and describes the city's schools with their present educational tracks. The schools are examined to point out how they fell short in satisfying the national emphasis on more comprehensive schools covering more areas of the full curriculum. The author finally focuses on his school's experiment in emphasizing pupils' independent work and in remodeling its facilities to fit the emphasis on independence in the curriculum. (JW)

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PEB 14

PROGRAMME ON EDUCATIONAL BUILDING

REMODELLING OF A LYCÉE IN GRENOBLE

by
G. Roche

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to article 1 of the Convention signed in Paris on 14th December, 1960, and which came into force on 30th September, 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

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2. Maiden Erlegh: An English Secondary School Development Project (Booth, C.), 1973
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INTRODUCTION

In France, as in many other OECD countries, the part played by post-compulsory secondary education in the educational system increased considerably during the 1970s. At the same time, education at this level underwent a number of changes to meet the needs of the 16+ more effectively in relation to transition to working life or further study. Inevitably, these developments have had an impact on school building. It became necessary not only to reconsider the use of existing buildings in relation to the new buildings being added to the stock, but also to convert the older buildings to take into account the educational changes which had occurred since their construction.

The present leaflet deals with the case of the Emmanuel Mounier Lycée in Grenoble which was modernised in the period 1974 to 1973. It illustrates two of the main concerns of the Programme on Educational Building during recent years : providing educational facilities for the 16 to 19 year olds and transforming the existing stock of school buildings.

The main alterations carried out in this lycée, and the reasons for them, are described in the second part of the leaflet. As a background to this description, general information on the French educational system and on school building in France is given in the first part of the report as well as a brief account of the development of the secondary school system in the Grenoble conurbation to enable the case to be seen in its local context.

The case of the Emmanuel Mounier Lycée and the Grenoble context are typical of the situation in many large towns in France. The location of the older lycées no longer matches present-day urban structures, and many comparatively recent schools (almost three quarters of the lycées have been built after 1962) were designed according to educational patterns and norms which had practically remained unchanged since the 19th century. More recently, however, the construction of new lycées according to more modern educational concepts has served as a forceful incentive to convert

and adapt other buildings. It should be emphasized, however, that education and teaching in the Emmanuel Mounier Lycée is not characteristic of the overall situation in French upper secondary education; but, in advance of current developments, it provides an interesting indication of innovative trends.

The author of this report is Mr Georges Roche, Inspecteur d'Académie, who was the Principal of the Lycée when its modernisation was planned and carried out. The photographs were taken by the pupils as part of the activities of the social club.

PART ONE : CONTEXT OF THE PROJECT

General Information on Upper Secondary Schools in France

a) Educational patterns in French lycées

The French educational system, as defined by the July 1975 Act, provides for two kinds of secondary schools : the first cycle (Sixth, Fifth, Fourth and Third Forms) where teaching is in collèges and where compulsory education is terminated (age 16); the second cycle (Second, First and Terminal Forms) where teaching is carried out in lycées.

Second cycle or upper secondary education is varied and there are several types of lycées :

- vocational lycées (lycées d'enseignement professionnel - LEP) which prepare pupils for an occupation or trade by the acquisition of vocational proficiency certificates (certificats d'aptitude professionnelle - CAP; brevets d'enseignement professionnel - BEP);
- general, technical or comprehensive lycées (lycées d'enseignement général, technologiques ou polyvalents) which after three years of study prepare pupils for the baccalauréat, a certificate which gives access to university.

Lycée pupils are channelled, at the end of their year in the 3rd form, into a specialised 2nd form :

- 2nd A (predominantly arts - French, modern languages, the social sciences);
- 2nd AB (the same as 2nd A with economics);
- 2nd C (predominantly mathematics and science, with physics and chemistry);
- 2nd T (predominantly technical).

Each of these streams is subdivided into more specialised sections involving optional subjects. For 2nd AB2, for example, two foreign

languages are compulsory; in 2nd A1, pupils opt for Latin, in 2nd T1 they study mechanical engineering, in 2nd T2 building and public works, etc. When they have finished their year in the 2nd form, pupils are directed to highly differentiated classes for their 1st and terminal forms, leading to the corresponding baccalauréat examination.

The type of education received predetermines the kind of higher education studies that students can follow. If a pupil has taken the arts syllabus in the 2nd form, there is no way he can switch to scientific or vocational studies. The stream most favoured is 2nd C, which gives plenty of scope for subsequent changes of direction. Selection for this class depends almost entirely on a pupil's results in mathematics during the first cycle. The choice of 2nd A or AB is all too often a negative one, based on the fact that a pupil's results in mathematics have been poor.

The general lycées have 'arts' (A) and 'scientific' (C) streams.

The technical lycées cater for pupils who have been channelled towards technical 2nd forms. There are lycées for :

. the industrial sector (2nd T1, 1st E, 1st F);
. building and public works (2nd T2);
. the commercial sector (2nd AB, 1st B, 1st G).

Comprehensive lycées are never entirely so, and none of them provides all the specialised courses possible.

The desire to lessen this 'compartmentalisation' has led to an experiment - to be discussed later in this report - which concerns the lycées providing the long type of second cycle (as opposed to the vocational lycées, designated as short type second cycle).

b) The school map

The distribution of lycées and collèges throughout the French territory depends upon a planning and management instrument known as the school map. This 'map' determines the location of new buildings and serves as the basis for the continuous restructuring of the existing school network.

By an Order dated 6th January 1959, compulsory education in France was extended to the age of 16. This demanded a planning effort and the rationalisation of the existing school network. In theory, a population of 100 000 calls for 10 collèges, each for 600 pupils, and a lycée for 1 500. However, existing buildings and local needs must also be taken

into account, particularly in old-established towns where demographic expansion and social and economic trends have led to a displacement of the population and to corresponding changes in suburban districts. This is particularly true of Paris and Grenoble. Lycées are now over-concentrated in town centres, and are often ill-adapted, while in the outskirts they are too few and unsuitably located.

If it is to serve as a forecasting and management instrument, the school map must be kept fairly flexible and revised regularly. The areas, districts or sectors from which pupils come are constantly changing, and the school map must take this into account. But the location of school buildings is determined by the situation which exists at the time they are built, and their conversion is often difficult, particularly when allowance has to be made for the 'occupational map' which determines the types of specialised training to be offered. This 'occupational map' ought to keep abreast of economic trends, but the specialised nature of already existing facilities makes it very difficult to modify the network.

c. The stock of buildings

French lycées, as an institution, were created by Napoleon I, and are generally housed in buildings constructed in the 19th century or during the present century. The first of these schools, like the Champollion and Stendhal Lycées in Grenoble, were usually sited in the "chef-lieu du département" (the chief town of the département). But the high birth rate after 1945, the prolongation of compulsory schooling, higher living standards and social change made it necessary to create new institutions providing long second cycle secondary education (see Table 1).

Table 1
AGE OF BUILDINGS
Lycées - France

Date of construction	Buildings owned (in per cent)					
	by the State		by local authorities		total	
Prior to 1945	18.23		15.25		16.91	
1945 to 1961	28.32		8.84		14.43	
1962 to 1971	39.43	53.45	49.10	75.91	47.45	73.66
After 1971	14.02		26.81		26.21	
Total	100.00		100.00		100.00	

Source : ministère de l'Education, service des études informatiques et statistiques.

The great majority of lycées are built according to the same basic pattern : one or two units for traditional classrooms; one unit for workshops in technical or comprehensive lycées; one unit for administration; one unit for day pupils (composed mainly of the pupils' canteen) and for the pupils' club; one unit for living quarters for certain categories of staff; sports facilities.

Lycées planned and designed prior to 1959 usually have one or two buildings for boarders (dormitories, rooms for individual study, etc.).

Table 2

DISTRIBUTION OF FLOOR AREA ACCORDING TO PURPOSE
(in per cent)

Type of school	Teaching(1)	Boarders	Day pupils	Administration	Workshops	Gymnasium	Miscellaneous
Lycée	44.4	22.4	5.0	6.8	16.7	3.8	0.9
LEP	33.0	23.5	5.3	7.8	20.6	2.3	7.5
Collège	60.8	5.9	11.3	11.0	3.2	1.3	6.5
Total	49.4	15.1	8.9	9.9	8.4	2.3	6.0

1) Classrooms whether or not for special subjects, libraries or resource centres, lecture rooms.

d) Transforming the stock

Although almost 75 per cent of the lycées have been built since 1962, they have rapidly proved unable to meet modern educational needs. Lycées became co-educational, whereas separate institutions for boys and girls had been the rule. In addition, after 1963, first and second-cycle classes were no longer held in the same school. Separation of the two cycles is still not complete. The construction of new collèges for the first cycle of secondary education has provided additional capacity in the schools which used to provide education from 11 to 18; these had to be adapted for second cycle secondary education only (16 to 18). In other instances, traditional lycées have been converted into collèges. In all such cases, the accommodation has proved unsuitable for its new use.

As far as secondary schools are concerned, the main responsibility for building lies with the Ministry of Education; recently, however, the powers of regional educational autnorities (Recteurs d'Académie) have been increased. But the conversion and adaptation of facilities (the main

subject of this paper) is usually dealt with under a different, more flexible procedure giving more responsibility to principals.

All requests for funds to be used for conversion and adaptation purposes are, of course, made by the school concerned. If modifications are needed (e.g. adaptation to facilitate group or individual work; creation or enlargement of a resource centre; provision of a pupils' club, laboratories, etc.), it is for the principal to put forward detailed project proposals, previously agreed upon by the users (teachers and pupils). These proposals are then subjected to a preliminary study by the architect or the municipal technical services.

General Information on the Grenoble Context

a) Population trends between 1962 and 1975

The conurbation of Grenoble comprises 32 communes with a total population of 389 068 according to the 1975 census. However, to give an idea of the rapid expansion of this population it should be noted that there was an increase of more than 100 000 inhabitants between 1962 and 1975, and that this was due, to more than 90 per cent, to the growth of the surrounding communes. For example, Echirolles increased from 7 111 inhabitants in 1962 to 33 288 in 1975, an increase of 368 per cent; Meylan from 3 115 to 12 122 (289 per cent); Sassenage from 2 558 to 7 021 (172)per cent); Saint Martin d'Hères from 14 453 to 38 052 (163 per cent); Pont de Claix from 4 914 to 12 746 (162 per cent); Saint Egrève from 7 641 to 12 246 (86 per cent).

b) The Grenoble school map as at present

On the 300 000 hectares comprising the Grenoble conurbation there are 12 general, technical or comprehensive lycées and 7 vocational lycées (LEP). For the distribution of pupils, the Grenoble conurbation is divided into four second cycle school districts, namely 01, 06, 07 and 08 (see Figures 1 and 2). The rule is that each district must contain at least one lycée. Because the lycées (most of which existed before the school map was drawn up) are situated mainly in the town centre, three of these districts consist of a part of the town of Grenoble together with some neighbouring suburban communes. These are the districts 01, 06, 07. District 08 consists only of suburban communes.

Figure 1 SCHOOL MAP OF THE GRENOBLE CONURBATION

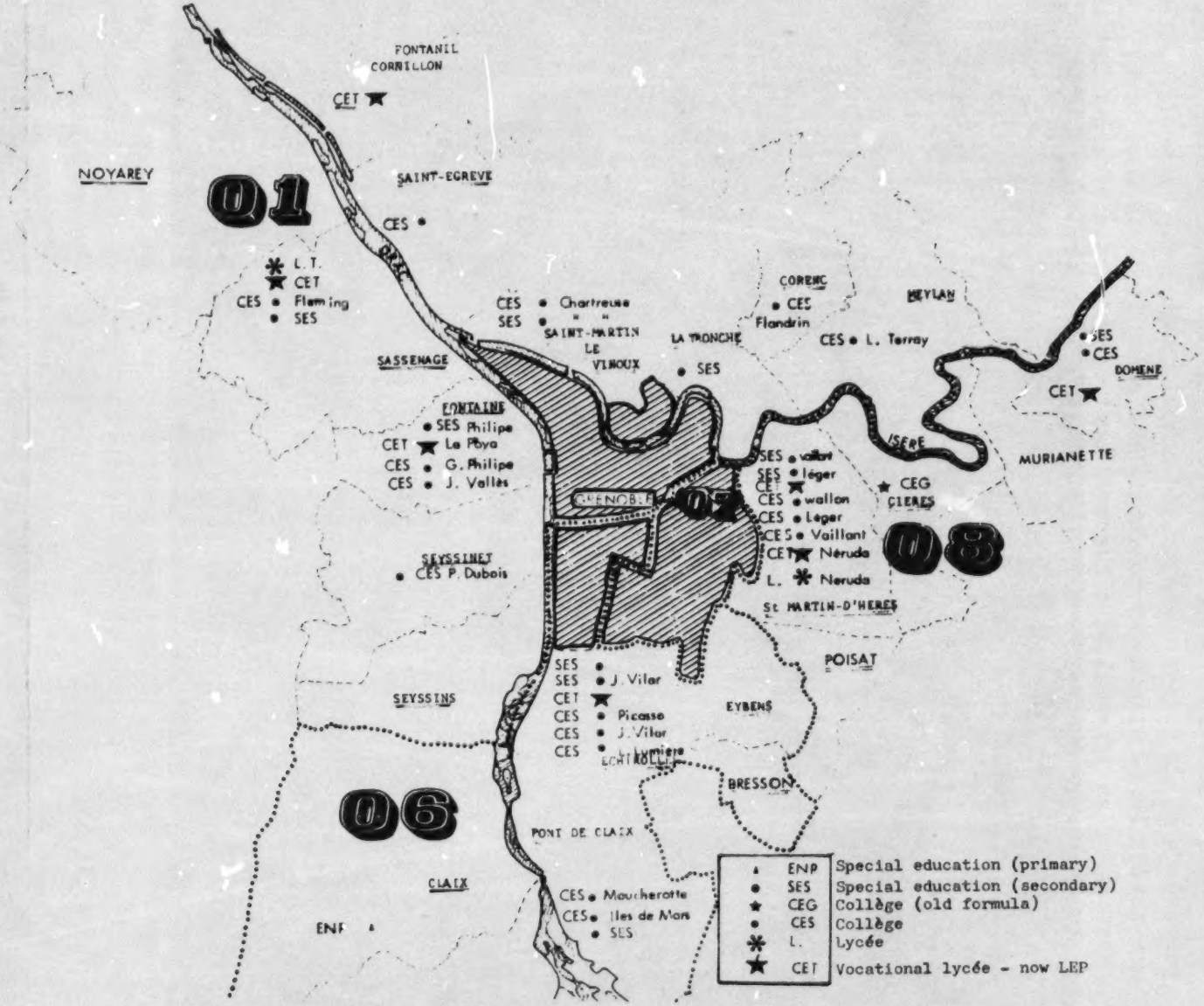
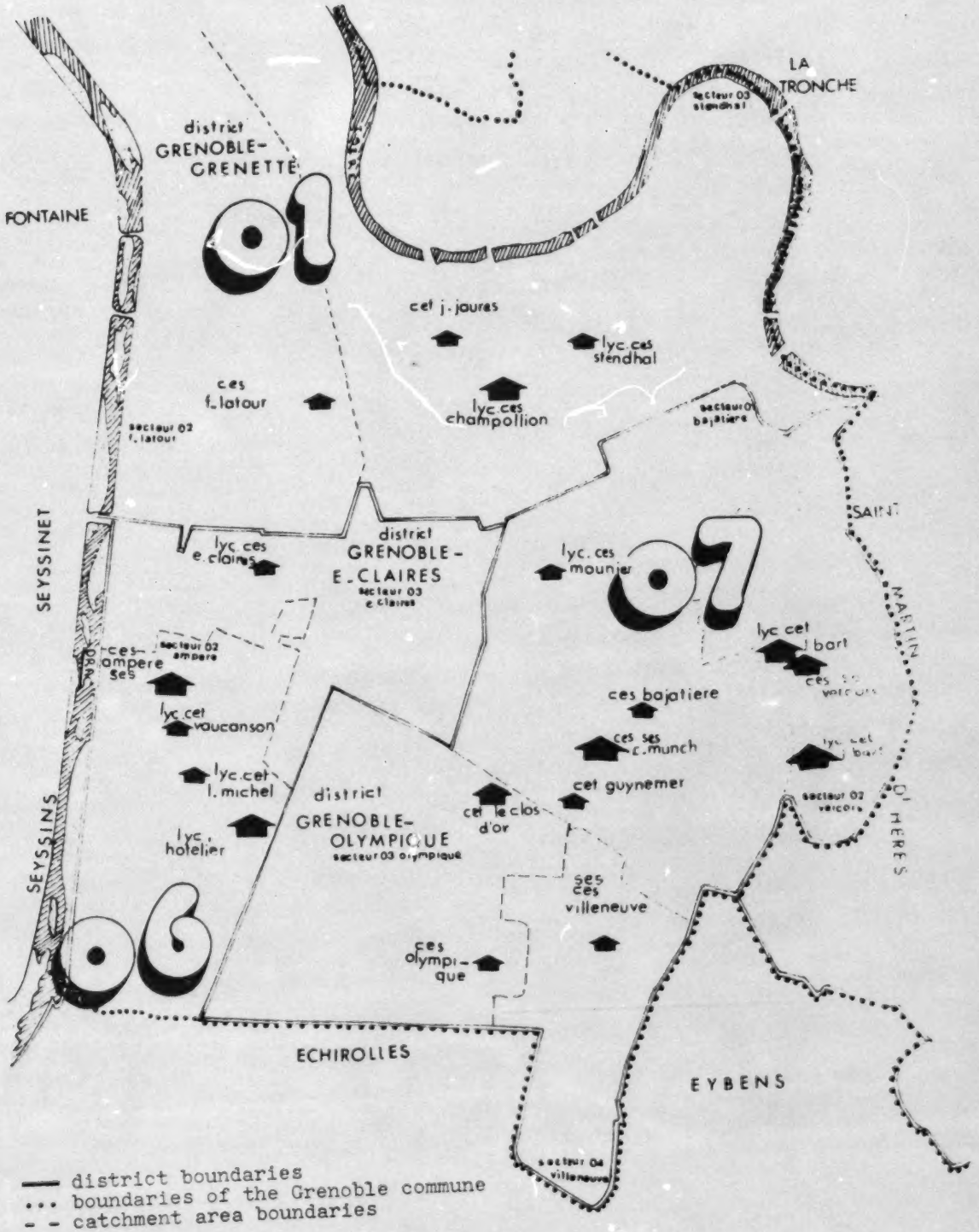


Figure 2 THE GRENOBLE SCHOOL MAP



The Districts

01 GRENOBLE-GRENETTE

This district covers the old part of the town.

Lycée Champollion

Lycée Stendhal

Lycée Fantin-Latour - officially 1st cycle

Lycée and LEP Sassenage - technical (building trades); catchment area extends beyond the district

Collège Seyssinet - officially 1st cycle

06 GRENOBLE-EAUX-CLAIRES

This district consists of the southern part of the town, developed since 1945, as well as the most recently develcped southern suburbs.

Vaucanson Technical Lycée and LEP
Louise Michel Technical Lycée and LEP
} inter-regional enrolment for some sections (computer sciences, paper trade techniques)

Lesdiguières Hotel Trades Lycée - inter-regional enrolment

Eaux Claires General Lycée - built since 1960

07 GRENOBLE OLYMPIC CITY

The most recently developed part of the town (since 1960).

Emmanuel Mounier Comprehensive Lycée

Jean Bart Technical Lycée (inter-regional enrolment for the paper trade section)

08 SAINT MARTIN D'HERES

This district, which consists of suburban communes, was created in 1975.

Pablo Neruda Comprehensive Lycée

The trends in school enrolment (long second cycle secondary education) in the conurbation of Grenoble are shown in Table 3.

The Problems of the School Map as Demonstrated by the Grenoble Case

The following comments on the situation of the lycées in the Grenoble conurbation will highlight the difficulties that are encountered in trying to establish a coherent school map.

Table 3

TRENDS IN SCHOOL ENROLMENT IN THE CONURBATION
OF GRENOBLE
LONG SECOND CYCLE SECONDARY EDUCATION

Districts and Schools	73-74	74-75	75-76	76-77	77-78	78-79
01						
Champollion LEG	1 369	1 441	1 508	1 519	1 543	1 495
Collège associé (first cycle)	-	-	(883)	(850)	(853)	(812)
Stendhal LEG	1 207	1 124	1 070	1 087	1 134	1 233
Collège associé	-	-	(783)	(824)	(774)	(687)
F. Latour Collège	-	-	(734)	(703)	(658)	(596)
Second cycle associé	290	268	234	197	-	-
Seyssinet Collège	Figures not provided					
Second cycle associé	141	147	117	87	106	108
Sassenage LT (1)	185	239	313	313	310	311
Total district	3 346	3 408	3 375	3 356	3 345	3 510
06						
Eaux Claires LEG	1 152	1 142	1 128	1 055	1 051	1 086
Collège associé	-	-	(1 002)	(921)	(862)	(825)
Vaucanson LT (1)	852	801	814	778	817	813
L. Michel LT (1)	1 306	1 294	1 284	1 306	1 312	1 264
Total district	3 431	3 355	3 343	3 261	3 310	3 291
07						
E. Mounier LP	872	1 066	1 186	1 250	1 264	1 411
Collège associé	(1 300)	(900)	(419)	(191)	0	0
Jean Bart LT (1)	901	917	893	925	993	993
Total district	1 773	1 983	2 079	2 175	2 257	2 405
08						
P. Neruda LT (1) (2)	226	226	112	331	538	-
Total Conurbation (second cycle)	8 776	8 972	8 909	9 123	9 550	9 845

LEG = Lycée enseignement général (general lycée)
LT = Lycée technique (technical lycée)
LP = Lycée polyvalent (compulsory lycée)

1) also has a vocational lycée (LEP)
2) opened in 1975 but the LEP existed before that date

a) Half the lycées in Grenoble are technical lycées

The proportion of technical lycées in Grenoble (50 per cent) is much higher than in the rest of France (less than 25 per cent). This is because of the industrial character of Grenoble as the centre of regional development. It should be mentioned, however, that enrolment in five of these lycées (or in some of their specialised sections) is inter-regional(1) or even national (Lesdiguières Hotel Trades Lycée). Nevertheless, there is no doubt that the proximity of a specialised institution does have an effect upon the choice of pupils living in the vicinity.

In spite of the unusually high proportion of these technical lycées, their geographical distribution follows the standard pattern in most French towns : they tend to be placed on the outskirts of the town. There are historical reasons for this (being of more recent construction than the general lycées, they were built on land which was available) but sociological factors are also significant : the technical lycées in Grenoble are in the southern half of the conurbation where low-income groups are more numerous.

b) The case of the old lycées

For the same historical reasons, the old lycées are located in what is to-day the town centre (they were set up in the 19th century and at that time they were intended to serve the whole département). This long-established tradition means that a large number of pupils still come from outlying communes. Less than one in four of the pupils at the Stendhal Lycée lives in Grenoble itself. The town of Grenoble (whose population represents 50 per cent of the conurbation) only accounts for 40 per cent of the pupils in the four general lycées. An appreciable proportion (16 to 18 per cent) of the pupils at Champollion, Stendhal and Eaux Claires Lycées live outside the official catchment areas for these lycées (see Table 4).

This sentimental attachment for the long-established lycées explains why five lycées in Grenoble still include classes from the first cycle, theoretically called "collège". Social pressures and political influences thus delay the effective separation of the two cycles into different institutions.

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1) Superimposed upon the general school map is the 'occupational map' referred to earlier.

Table 4

NUMBER OF PUPILS FROM COMMUNES IN THE CONURBATION ATTENDING LYCEES IN GRENOBLE

	Localisation des lycées							
	DISTRICT 01				DISTRICT 06		DISTRICT 07	
	GRENOBLE GRENETTE				GRENOBLE EAUX CLAIRES		GRENOBLE OLYMPIQUE	
	Champollion*(c)		Stendhal(c)		Eaux Claires(c)		Emmanuel Mounier*(p)	
	1977	1978	1977	1978	1977	1978	1977	1978
DISTRICT 01								
Secteur de Sassenage	362	402	23	44	53	57	23	31
dont Fontaine	221	235	10	11	7	6	1	1
Secteur de Meylan	51	46	563	612	10	14	41	35
dont Meylan	17	21	224	259	5	-	20	16
Sect. de St. Egrève	274	273	59	71	7	4	10	14
dont St. Egrève	213	216	39	52	4	4	6	9
TOTAL DISTRICT 01	687	721	645	727	70	75	74	80
DISTRICT 06								
Secteur d'Echirolles	44	44	22	26	176	180	190	289
dont Echirolles	30	38	14	21	165	171	118	199
Sect. P. de Claix	11	13	14	15	114	127	19	15
dont P. de Claix	6	8	9	7	74	5	7	6
TOTAL DISTRICT 06					290	307		
DISTRICT 08								
Secteur de Domène	34	34	20	20	6	7	12	5
Sect. de St.M.d'Hères	48	50	24	38	8	9	74	73
Sect. de Villard Bt.	11	6	7	-	4	4	5	6
DISTRICT 05								
Voreppe				3			3	1
TOTAL AGGLOMERATION	835	868	732	829	378	402	377	469
% Agglo. sur non Grenoblois	87%	87%	91%	89%	67%	68%	75,5%	80%
EFFECTIFS TOTAUX	1543	1495	1134	1233	1056	1086	1274	1411
Non Grenoblois	1002 65%	1000 67%	805 71%	935 76%	560 53%	592 54,5%	499 39%	587 42%
Grenoblois	541 35%	495 33%	329 29%	298 24%	496 47%	494 45,5%	775 61%	824 58%

With the exception of the Eaux Claires Lycée, most of the pupils who are not from Grenoble itself come from the communes in the conurbation (80 to 90 per cent). As a rule, pupils go to the schools in the district where they live but this varies from school to school.

The present table indicates the flow of pupils from different residential areas or sectors to the lycées in Grenoble. The shaded areas correspond to the normal catchment area for each lycée. Because it is an experimental lycée, Emmanuel Mounier has no defined catchment area.

* (c) classical and modern lycées
(p) comprehensive lycées

c) The school map - an instrument for change

Local interests often conflict with those of the conurbation. Thus, this state of affairs

- prevents (or delays) the construction of new lycées in the outlying communes where population growth is rapid (Echirolles, Meylan, etc.); such new lycées would inevitably lead to the decline of the lycées in Grenoble;
- prevents the progressive development of comprehensive second cycle institutions.

The case of Grenoble therefore illustrates the ambiguous role played by the district in the management of the school map. The district must, in fact, be able to adapt itself to present circumstances and, at the same time, take future developments into account. But because schools are concentrated in the heart of the city, the conurbation has to be divided up in a manner which is not necessarily rational. Moreover, the need to keep an even flow of pupils between the various institutions means that the district becomes merely a modifiable catchment area. Thus, if the management of already existing facilities becomes the prime concern, the district's role as an instrument for planning and rationalisation of the school network - which is a long-term task - may be endangered.

d) The adaptation process

However, without waiting any longer, old and new schools in the Grenoble conurbation have begun to adapt its facilities to new educational circumstances and needs. Thus, since 1974, documentation or resource centres at the Champollion, Stendhal, Emmanuel Mounier, Jean Bart, Sassenage and Eaux Claires Lycées have either been set up or have been enlarged. Physics and biology laboratories have been extended. So have facilities for the teaching of economic sciences and techniques, which had to be made available if schools which originally offered only general secondary education were to 'go comprehensive'; for instance, G1 and G2 sections providing preparation for technician's baccalauréats in management and accounting had to be opened.

The study of the Emmanuel Mounier Lycée in Part II describes in greater detail the way in which such conversion is carried out.

PART TWO : THE CASE OF THE EMMANUEL MOUNIER LYCEE

Developments from 1964 to 197[illegible]

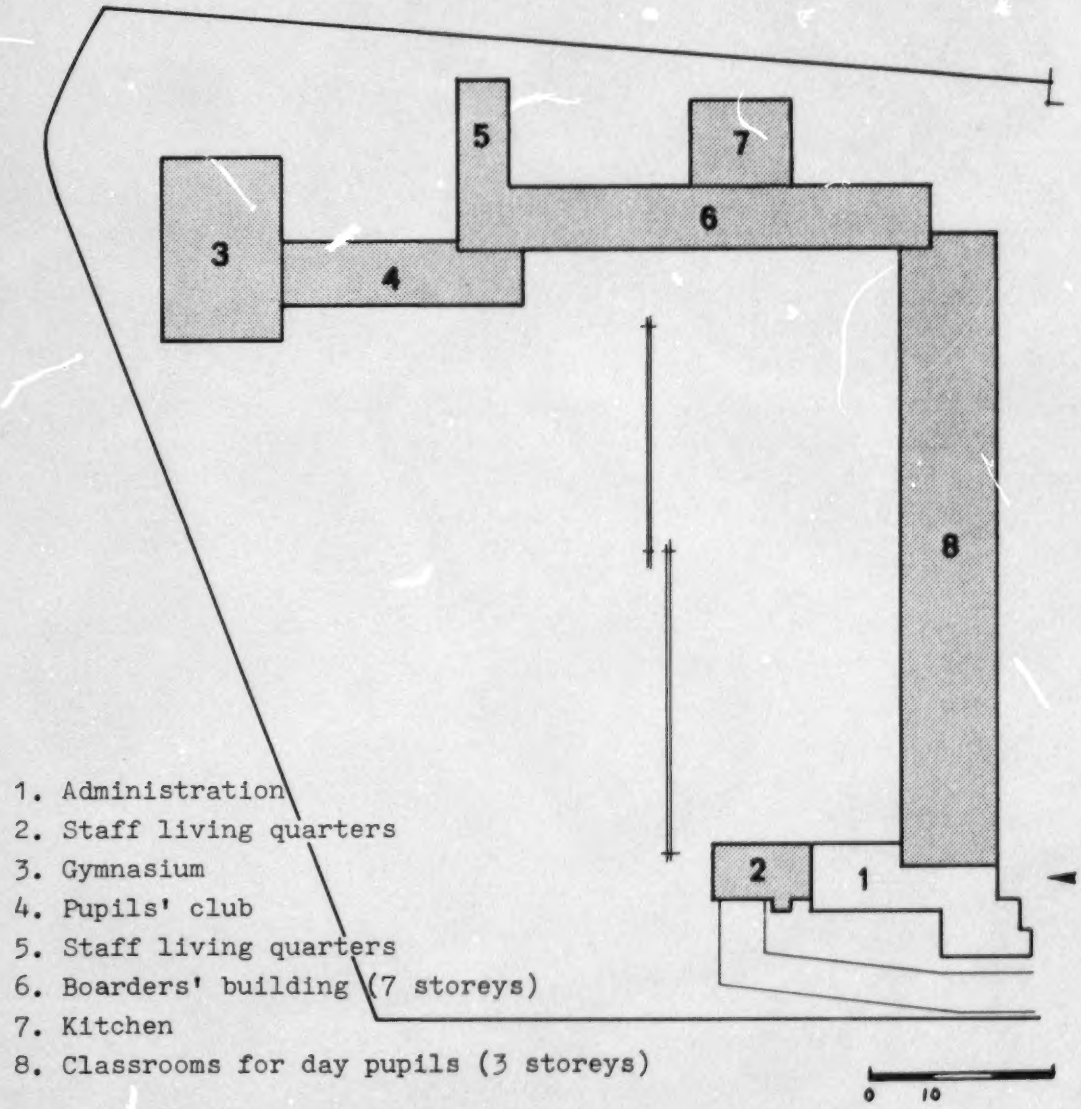
The Emmanuel Mounier Lycée was opened in 1964; it was planned and designed to fulfil needs prior to the January 1959 Order.

Located in the southern part of Grenoble in the new housing districts of the town, it consists of a series of buildings forming a dissymetrical "U" (see Figure 3). This lycée was originally intended to take pupils for the seven years of traditional secondary education which has since been split into the first and second cycles.

The plan for the school districts in the département (l'Isère) designated the Emmanuel Mounier Lycée as the second cycle classical and modern lycée of the "Olympique" 07 district. This was mainly an urban area since it included the sectors of the southern part of Grenoble as well as those of the town of Saint Martin d'Hères; the district boundaries were changed after the Pablo Neruda Lycée was built in Saint Martin d'Hères. As a result of the new district boundaries which meant that most pupils lived in the area, the boarders' building became unnecessary and could be used for other purposes.

In addition, the completion in 1972 of the Charles Münch Collège in the same neighbourhood made it possible to separate the first and second cycles and from then on the Emmanuel Mounier Lycée handled the second cycle only. The first cycle 'evacuated' the Emmanuel Mounier Lycée in successive batches (from 1974 to 1976). In 1973 there were 2 172 pupils at the Emmanuel Mounier Lycée (both cycles inclusive). In 1978 there were 1 411 pupils (second cycle only). By comparison with 1973, therefore, the fall in enrolments in 1978 was about 750 pupils. The second cycle increased over the same period by 560 pupils. The boarding section was closed in 1974.

Figure 3 SITE PLAN OF THE EMMANUEL MOUNIER LYCEE



1. Administration
2. Staff living quarters
3. Gymnasium
4. Pupils' club
5. Staff living quarters
6. Boarders' building (7 storeys)
7. Kitchen
8. Classrooms for day pupils (3 storeys)

The New 1973 Educational Structure

a) Background

At the beginning of the 1973 school year, the Emmanuel Mounier Lycée, after an exchange of proposals with the Ministry of Education, agreed to conduct an experiment in two main areas :

i) The educational structure : the compartmentalisation of the second cycle (see above) to be replaced by a more unified system, with a common core in the first year of the second cycle called the 'undifferentiated second form';

ii) Methods : development of pupils' independent work and of co-operation, or even team-work, among teachers.

b) Aims

The creation of comprehensive lycées was the first step in de-compartmentalisation since it made it possible to group pupils engaged in different types of study. As a result, the procedures for changing streams became more flexible. But the new structure has its limitations : the compartmentalisation of streams and their status pattern remain.

The Emmanuel Mounier experiment is an attempt to break through these barriers. Its main aim is to postpone the choice between the various streams for one year. In order to achieve this, the system of highly compartmentalised streaming was replaced by a more flexible arrangement of educational activity : a common core of subjects for all pupils and a range of options increasing in number and diversity as pupils advance towards the terminal form. The introduction of an optional sector in addition to a common core is aimed at increasing the motivation of young people by allowing more freedom of choice and more say in the directions they take.

Other goals associated with this main aim are :

- to ensure a better integration of technical and general education;
- to develop the pupils' ability to learn by themselves;
- to make teaching more individualised.

c) Structures : from the undifferentiated second form to the experimental baccalauréats

Table 5 shows the experimental structure. The second form is undifferentiated. As from the first form, the compulsory options vary according to the three main steams : arts (L), science (S) and mixed (LS) with further diversification in the terminal form.

Table 5

SCHEDULES OF EXPERIMENTAL CLASSES

SECOND FORM

COMMON CORE		COMPULSORY OPTIONS		NON-COMPULSORY OPTIONS	
FRENCH	4 hrs	LATIN	5 hrs or 5 hrs GC*	1st LANGUAGE EXTRA-TEACHING	2 hrs
HISTORY-GEOGRAPHY	4½ hrs	GREEK	3 hrs GC	ART	1 hr
LANGUAGE I	3 hrs	LANGUAGE II	3 hrs or 5 hrs GC*	MUSIC	1 hr
MATHEMATICS	5 hrs	LANGUAGE III	3 hrs	TYPING	2 hrs
PHYSICS	4 hrs	ECONOMICS	3 hrs		
BIOLOGY	1½ hrs	BIOLOGY	3 hrs		
TECHNOLOGY	2 hrs	ART	3 hrs		
PHYSICAL EDUCATION	3 hrs	MUSIC	3 hrs		

*GC = grands commençants (beginners)

Note : Each pupil has to do two compulsory options and preferably one non-compulsory option -
L I : German, English; L II : German, English, Spanish, Italian; L III : Spanish, Italian

22

FIRST FORM

COMMON SUBJECTS = 15 hrs	
FRENCH	6 hrs
MODERN LANGUAGE I	3 hrs
HISTORY-GEOGRAPHY	4 hrs
PHYSICAL EDUCATION	2 hrs

S stream (science)

COMPULSORY SCIENCE OPTIONS (c)		
MATHEMATICS	6 hrs	
PHYSICS	5 hrs	

LS stream

MATHEMATICS	6 hrs	
PHYSICS or BIOLOGY	2 hrs	(a)
MATHEMATICS	3 hrs	
PHYSICS	5 hrs	

L stream (arts)

MATHEMATICS	3 hrs	
PHYSICS or BIOLOGY	2 hrs	(a)

SPECIALISATION OPTIONS (c) Each pupil must choose 2 options		
BIOLOGY	3 hrs	(a)
TECHNOLOGY	4 hrs	
APPLIED MECHANICS	2 hrs	
ECONOMIC AND SOCIAL SCIENCES	4 hrs	
LATIN	3 hrs/4 hrs GC*	
GREEK	3 hrs GC*	
MODERN LANGUAGE II	3 hrs/4 hrs GC*	
MODERN LANGUAGE III	3 hrs	
ART	3 hrs	
MUSIC	3 hrs	

APPLIED MATHEMATICS	1 hr	(b)

OPTIONAL SUBJECTS

LANGUAGE I EXTRA-TEACHING	2 hrs
ART - MUSIC	1½ hrs

a) Pupils who opt for BIOLOGY 3 hrs do not have to choose one of these two options.

b) APPLIED MATHEMATICS is compulsory for pupils who, with mathematics 3 hrs, take :
- the BIOLOGY 3 hrs option
- or the PHYSICS 5 hrs option in the LS stream
- or the ECONOMICS option.

c) Total tuition in optional subjects must not amount to less than 11 hrs or more than 17 hrs (except in stream S).

25

26

COMMON SUBJECTS = 12 hrs

TERMINAL FORM

PHILOSOPHY	3 hrs	
MODERN LANGUAGE I	3 hrs	
CONTEMPORARY WORLD	4 hrs	(c)
PHYSICAL EDUCATION	2 hrs	

COMPULSORY OPTIONS (e)

S1	MATHEMATICS	9 hrs	
	PHYSICS	6 hrs	
S2	MATHEMATICS	6 hrs	
	PHYSICS	6 hrs	
LS1	MATHEMATICS	9 hrs	
	PHYSICS OR BIOLOGY	1½ hrs	(a)
LS2	PHILOSOPHY	2 hrs	(d)
	MATHEMATICS	6 hrs	
	PHYSICS OR BIOLOGY	1½ hrs	(a)
LS3	PHILOSOPHY	4 hrs	(d)
	MATHEMATICS	3 hrs	
	PHYSICS	6 hrs	
L1	PHILOSOPHY	5 hrs	(d)
	MATHEMATICS	4 hrs	
	PHYSICS OR BIOLOGY	1½ hrs	(a)
L2	PHILOSOPHY	2 hrs	(d)
	MATHEMATICS	4 hrs	
	PHYSICS or BIOLOGY	1½ hrs	(a)

SPECIALISATION OPTIONS (e)

Each pupil must choose 2 options

BIOLOGY	3 hrs	(a)
TECHNOLOGY	4 hrs	
APPLIED MECHANICS	2 hrs	
ECONOMICS AND SOCIAL SCIENCES	4 hrs	
LATIN	3 hrs	
GREEK	3 hrs	
MODERN LANGUAGE II	3 hrs	
MODERN LANGUAGES III	3 hrs	
ART	3 hrs	
MUSIC	3 hrs	
APPLIED MATHEMATICS	1 hr	(b)

a) Pupils who opt for BIOLOGY 3 hrs do not have to choose one of these two options.

b) APPLIED MATHEMATICS is compulsory for pupils who, with MATHEMATICS 4 hrs, take :
- the BIOLOGY 3 hrs option
- or the ECONOMICS option
- or the PHYSICS 6 hrs option

in the LS stream.

c) In S1, S2 and LS3, HISTORY and GEOGRAPHY can be taken instead of one of the two specialisation options.

d) In addition to the 3 hrs of the common core.

e) Total tuition in optional subjects must not amount to less than 12 hrs or more than 18 hrs (except in stream S).

OPTIONAL SUBJECTS

PHILOSOPHY	3 hrs
FRENCH	2 hrs
LANGUAGE I EXTRA-TEACHING	2 hrs
ART - MUSIC	1½ hrs

Organisation of Work

a) Curricula and schedules (Table 5)

The new curricula as envisaged by the reform have been tried out since the beginning of the 1977 school year in French, Latin, Greek, modern languages, history and geography, economics and mathematics. In certain disciplines, like history, the curriculum is being modified during the trial period in the light of assessments by the teachers who work together in proposing and implementing new programmes.

b) Alignment of timetables

The class-groups make up units and within each unit the schedules for the different subjects are co-ordinated. This arrangement makes it possible to assign pupils to differentiated groups according to type of activity (for example, work in small groups and in a large group) or according to their progress in the subject concerned (setting or groups by level of performance). These 'alignments' of timetables make for easier communication between pupils taking different options and facilitate interdisciplinary and intradisciplinary activities, as well as team-work by teachers.

c) Options

The various options, e.g. Latin, Greek, modern languages II and III, economics, typing, art and music, can be combined to suit the pupil's requirements. A judicious choice of options enables a pupil to take the baccalauréat in subjects better suited to his individual projects. To give an example, the LS1 or LS2 baccalauréat with an economics option provides the best preparation for economic and commercial studies because it is combined with scientific, economic and linguistic courses.

d) Co-operation

This experiment cannot work without regular co-operation and team-work on the part of the teachers, who are allocated special time for this.

e) New types of activity

Such co-operation is becoming more popular. Ideas gain from being being shared : they evolve and are more likely to materialise; they generate new teaching methods. The ambition of this approach

to teaching is to develop the ability of pupils to be autonomous, arouse their curiosity, teach them to work on their own or in groups when collecting information, when using it or when compiling project files. This approach to teaching requires changes in the physical environment of the school.

Need for More Space

The need for more space began to be felt as from 1974 for the following reasons :

- more science teaching
- new teaching and learning methods
- introduction of new subjects.

a) More science teaching

From 1973 to 1978 the lycée developed as follows :

- the second form class-groups increased from 9 (of which 7 science and 2 arts) to 15 undifferentiated class-groups;
- in the first and terminal forms, the increase was from 8 class-groups in each (5 science, 3 arts) to 14 (9 science, 2 arts and 3 mixed).

This considerable extension of science teaching has increased the need for specialised accommodation for

i) natural science. In the second form pupils were not taught natural science; from now on they will be given one and a half hours per week in split classes (each form is divided into two), i.e. a total of 45 hours per week. The biology option in the second form totals 24 hours. In the first and terminal forms 213 room hours were needed in 1978 as compared with 45 room hours in 1973, which means that six specialised rooms are occupied throughout the week as compared with two in 1973.

ii) physics. The increase in requirements is less spectacular but it can be estimated at 40 per cent, comprising a total of 265 room hours per week dispensed in specialised accommodation (in 1978 eight rooms are needed, compared with four in 1973). The capacity of each room corresponds to one class-group although about half the time the rooms are occupied by half-groups (split classes). A calculation in terms of pupil places or work places

needed would doubtless have produced different results but it would also have involved a different design of the facilities less familiar to French teachers.

b) New teaching/learning methods

Before its conversion, the library/resource centre occupied a space originally intended for three classrooms. Sixty seats were available, i.e. in theory 420 seat hours per day, the centre being open for seven hours daily. Owing to lack of staff, it could not be kept open from 12 to 14 hours, a period which would have been particularly convenient for pupils.

This meant that for many pupils access to the library/resource centre was limited to one hour per week. Independent study was not very developed and few teachers used the centre during their teaching hours for work in small groups. It was therefore desirable to increase the number of available places, diversify the functions of the centre by installing study bays or small working rooms and attach to the centre rooms set aside for group work which would become virtual annexes to the centre (rooms 07 and 08 on the fourth and fifth floors). Furthermore, the prospect of an increasing use of audiovisual aids made it necessary to have listening, projection, recording, maintenance and production rooms.

c) Introduction of new subjects

The facilities mainly concerned are for the plastic arts and industrial technology.

In the new organisation the plastic arts became a full option and pupils immediately responded with enthusiasm. Among second form pupils 120 out of 450 opted for this subject in the first year of the experiment and the percentage has subsequently stayed the same. A real studio was gradually set up to which it became necessary to add other rooms earmarked for the plastic arts (e.g. for sculpture) and also a storeroom.

To link technology and culture and make industrial technology a general education subject is an original approach. The teaching of industrial technology was assigned to technical lycée teachers, who had to develop the curriculum from scratch. It was to be taught to all second form pupils and was to become optional in the first and terminal forms. It was assumed that work would be carried out on work-benches in split class-groups of 15 pupils each. For 16 second form class-groups

representing 32 split groups for two hours per week, 64 room hours or two rooms were therefore needed; but, in fact, four rooms were necessary if all pupils in a given class-group were to be able to work simultaneously. A teachers' workshop and storeroom were also needed. These specialised facilities could not accommodate other types of teaching.

Constraints

The constraints involved were architectural and financial :

- first, architectural : although built very recently, the buildings had been designed for purely traditional teaching purposes. Difficulty of access to areas released in the boarding premises was another constraint, which it was impossible to overcome in the case of the sixth and seventh floors;
- then, financial : the funds could only be allocated on a year-by-year basis; the sums involved amounted to approximately 350 000 French francs per year (about 10 per cent of the total capital funds available to the Académie). This meant that the building works had to be done in stages as shall be seen later on.

Planning and Implementation

Initiated in 1971, the project at each stage of its development came up against the problem of how to adapt the premises. During the school-year 1972-73, the principal's suggestion to study the possibilities of developing new structures for the second form gave rise to an extensive consultation process involving teachers as well as parent and pupil representatives.

The official request for the school to become an experimental lycée was submitted to the Ministry in 1973. It specified the educational aims of the project and the means required.

The town of Grenoble, as joint owners with the State of the boarders' building, financed part of the work which was carried out by the technical services of the municipality, with the principal working in close collaboration with the municipal architects. The open-plan schools of Villeneuve de Grenoble, the colleges in Québec and the Toulouse-Lautrec Lycée in Toulouse served as reference examples for the layout and articulation of spaces.

Because of the time required for administrative and technical approvals, the 5th floor was only completed in 1975, the library and resource centre in 1976 and the 4th floor in 1978.

Traditional classroom
(capacity : 40 pupils)

Remodelled traditional classrooms (rooms 07 and 08 forming part of the resource centre) : changes concern furniture and finishes only.

Adaptation Works : The Resource Centre (Figure 4)

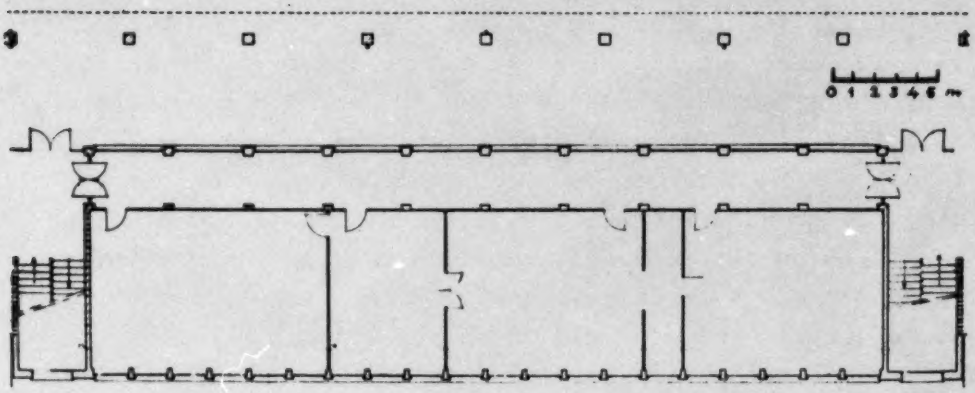
Initially, the library was on the ground floor of building 8 (cf. Figure 3). Its area was delimited at either end by staircases. The only possibility for extending it was the indoor corridor serving the ground floor and beyond it the covered recreation area opening on to the courtyard. It was this project which was carried out despite the danger it involved of dividing the ground floor into two separate parts. One of the two entrances had to be blocked off to prevent the centre from being used as a circulation area. A certain number of other rooms also form part of the resource centre (rooms 07 and 08 on the 4th and 5th floors equipped for group work; a projection room on the 2nd floor); this dispersal of the centre's premises tends to create communication problems and difficulties for the transportation of books and other material.

Despite this, the modifications made have enabled the centre to become a real media library comprising :

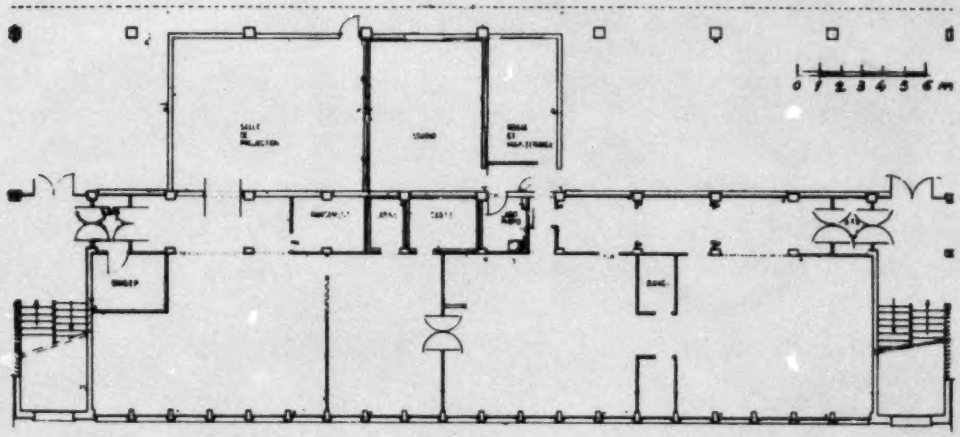
- small bays for group work;
- a classification system for written material (books, newspapers, journals, files) better suited and more accessible for individual work (social sciences and economics, literature and languages);
- audiovisual aids (films, video, overhead projectors, epideascopes, tape recorders, etc.) stored separately and ready for use in a listening or projection room; audiovisual documentation can also be reproduced in sound-proof cabins (for magnetic bands) or in a photographic laboratory. A studio and control room enables the production of material; an area has also been provided for maintenance of equipment.

The centre, which is open throughout the school day, has had a great success as the users have not only been able to find documentation for their work but also information on careers (ONISEP) and cultural activities in the region (Maison de la Culture, Information Centre for Teachers, etc.). But the centre is the victim of its own success : it is understaffed. In addition to the two documentalists officially composing the centre's staff, the school management has had to allocate three ancillary staff members and a secretary to the centre, on a provisional basis, but even so the staff is still insufficient.

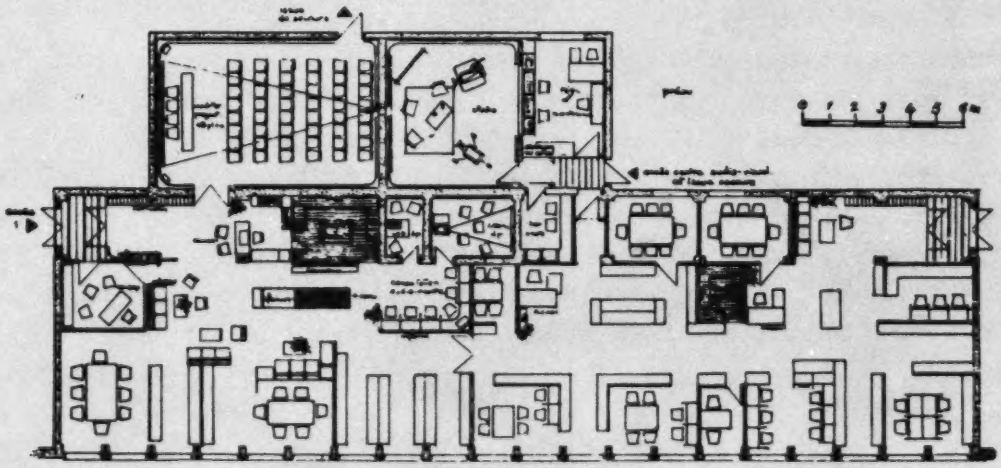
Figure 4 THE RESOURCE CENTRE



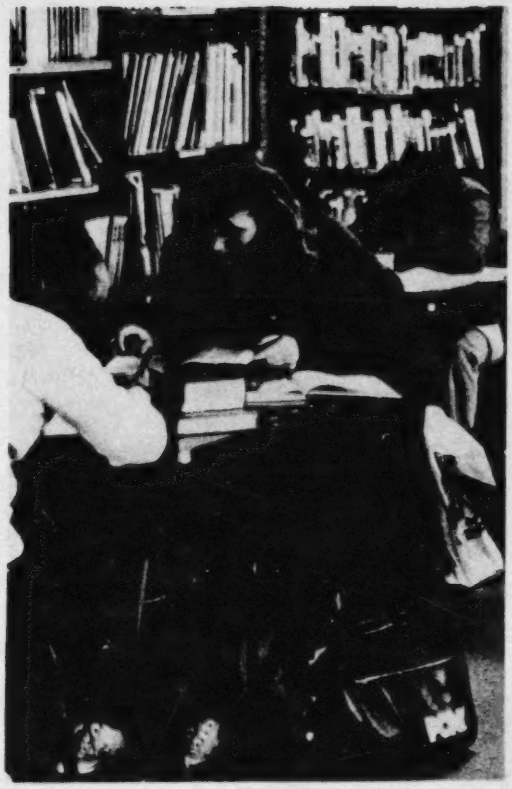
Initial library

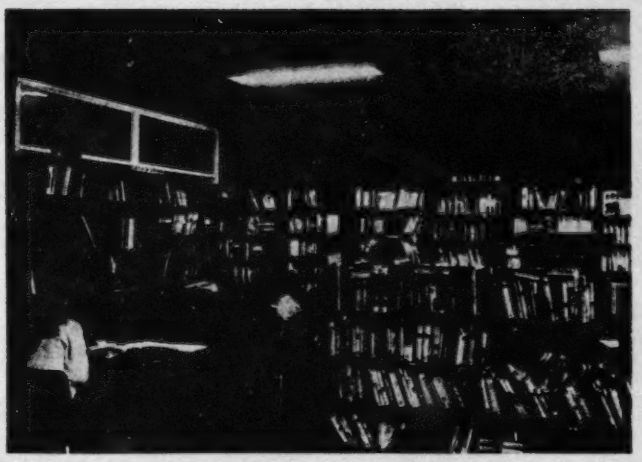


Present plan



Proposed furniture layout





The resource centre : documentation and study. Lower right : reception and information desk.

Adaptation Works : Clusters of Differentiated Rooms for Group Work

The traditional classroom lacks flexibility in use : there is no way in which the class can be split into small groups nor is it possible to handle large groups - as mentioned earlier both these possibilities are very important from the teaching point of view. Hence the idea of converting disused dormitories. These had the disadvantage of being rather far from the resource centre and of being located on an upper floor (there was no question of converting the 6th and 7th floors as access to them was far too difficult) but had the advantage of being available and spacious.

Following consultation between the principal and the teaching staff on the brief, the technical services of the Grenoble municipality carried out two identical sets of accommodation on each floor consisting of :

- two large trapezoidal rooms which can be divided into four smaller rooms
- six bays(1) divided by half-partitions adjacent to the large rooms
- one small room for the teaching staff
- one room large enough for groups of about 20 people.

These very bright rooms have carpeted floors and padded walls providing efficient sound-proofing while warm colours give a cheerful overall effect.

This operation was financed in 1975 and the facilities were put into use in 1976. The cost was 400 000 French francs.

In the following years, numerous requests have been registered for using these rooms,for many different purposes and with ever-growing success :

- for independent work or work in small groups in social sciences and economics;
- in literature for the organisation of a reading club with three class-groups simultaneously participating in the discussion; for the preparation, by different groups, of panels on a common theme followed by a joint comparative discussion; for drama, bodily expression, directing;
- in mathematics : simultaneous work by groups according to level of performance.

These premises have no 'school' atmosphere and have proved to be ideally suited for a very wide range of activities necessitating rapid transition from split classes to full classes.

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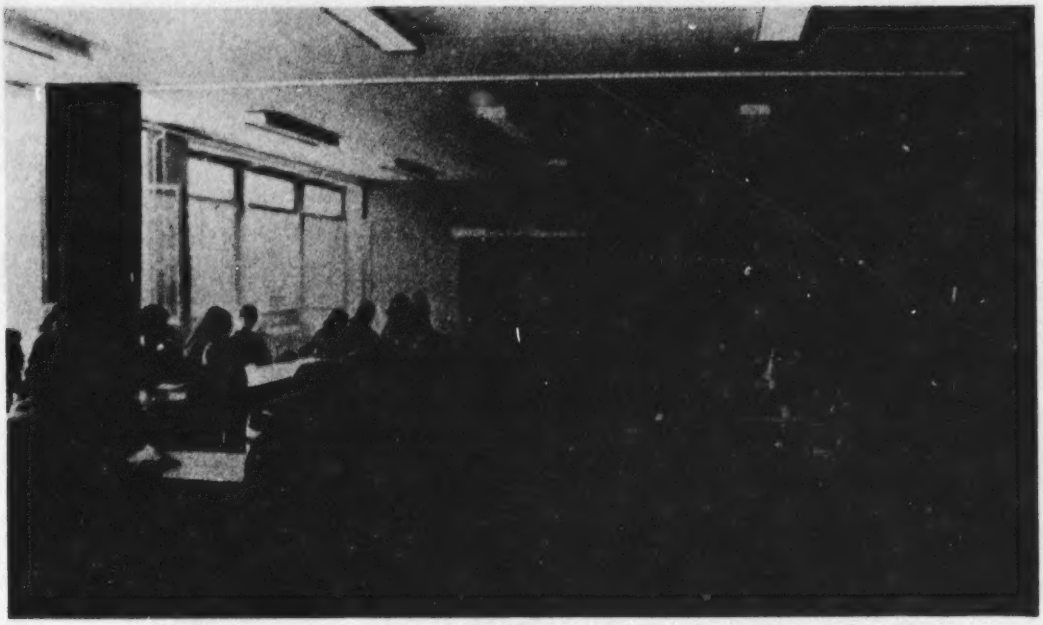
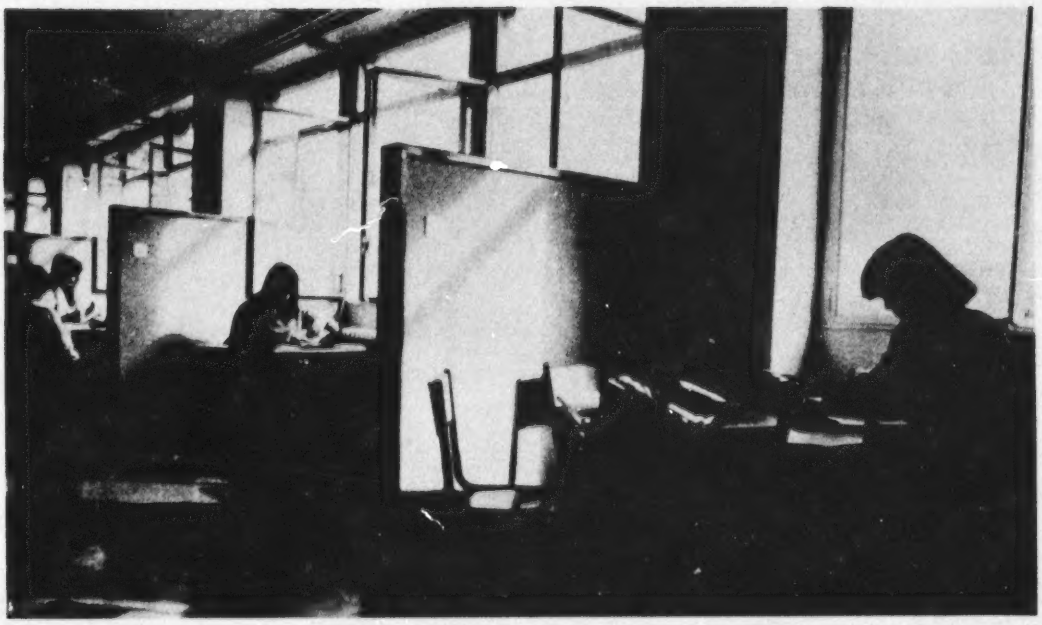
1) It was later proposed that some of the small bays could have tiled floors for messy jobs (painting, glueing, etc.).





Differentiated rooms for group work : large room which can be divided into two; bays for small group work or individual study.

Two Final Comments

The present leaflet has shown how, in a given local context, a particular French lycée has tried to put into practice a new educational structure and introduce more inductive teaching methods. The reader is left to draw his own conclusions; however, the author wishes to make two final comments.

The first concerns the building implications. Modifications are expensive and must inevitably remain restricted in scope. Although it is difficult to predict the future, it is certain that a less conventional approach to school building design, which takes into account the best and most recent developments in educational practice, would facilitate the continuous adaptation to new needs which in future will characterize education in a continuously changing society.

The second remark concerns the need for greater diversity in staffing. Although aims and methods are changing in French educational institutions and efforts are made to adapt the accommodation accordingly, there still remains the problem of the allocation of non-teaching staff, inadequate in numbers and insufficiently qualified. For example, a resource centre needs qualified audiovisual experts as well as documentalists. Adapting premises to suit their new functions is a necessary prerequisite to change but to ensure maximum benefit from the not incondiderable capital outlay involved it is essential that the operational implications are fully acknowledged.

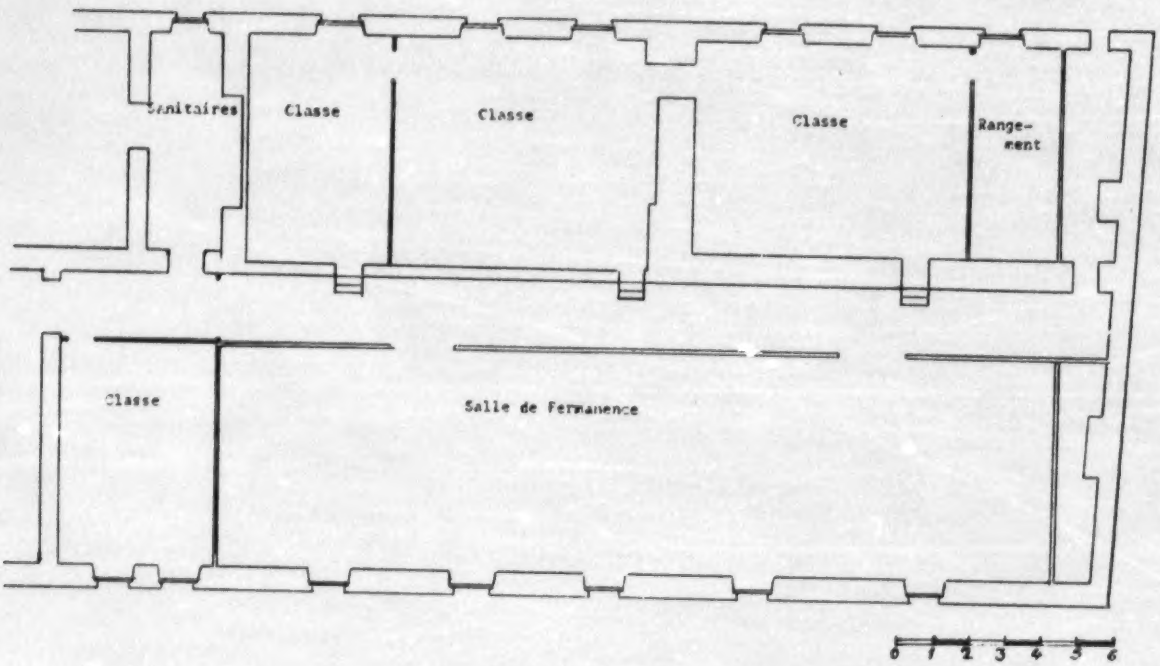
THE RESOURCE CENTRE OF THE STENDHAL LYCEE

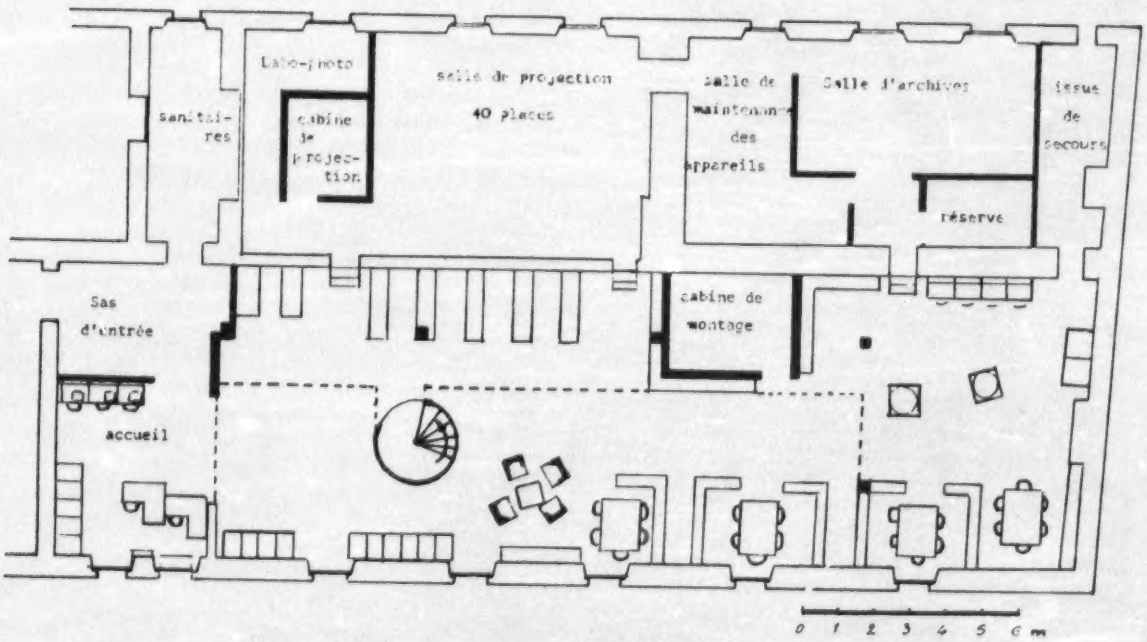
Very old buildings are sometimes surprisingly suitable for adaptation to new uses. For instance, following the 1974 Ministerial Circular, a resource centre (600 m^2) was set up at the Stendhal Lycée, whose premises were formerly those of a 17th century Jesuit College. The ceiling height of the hall in question - 8 metres - enabled a mezzanine to be built which, together with five adjacent classrooms, made this area large enough for 100 people to work in at the same time. It enabled the resources of two former libraries (the pupils' and the teachers' libraries) and all audio-visual aids to be grouped in one place. (See Figure 5).

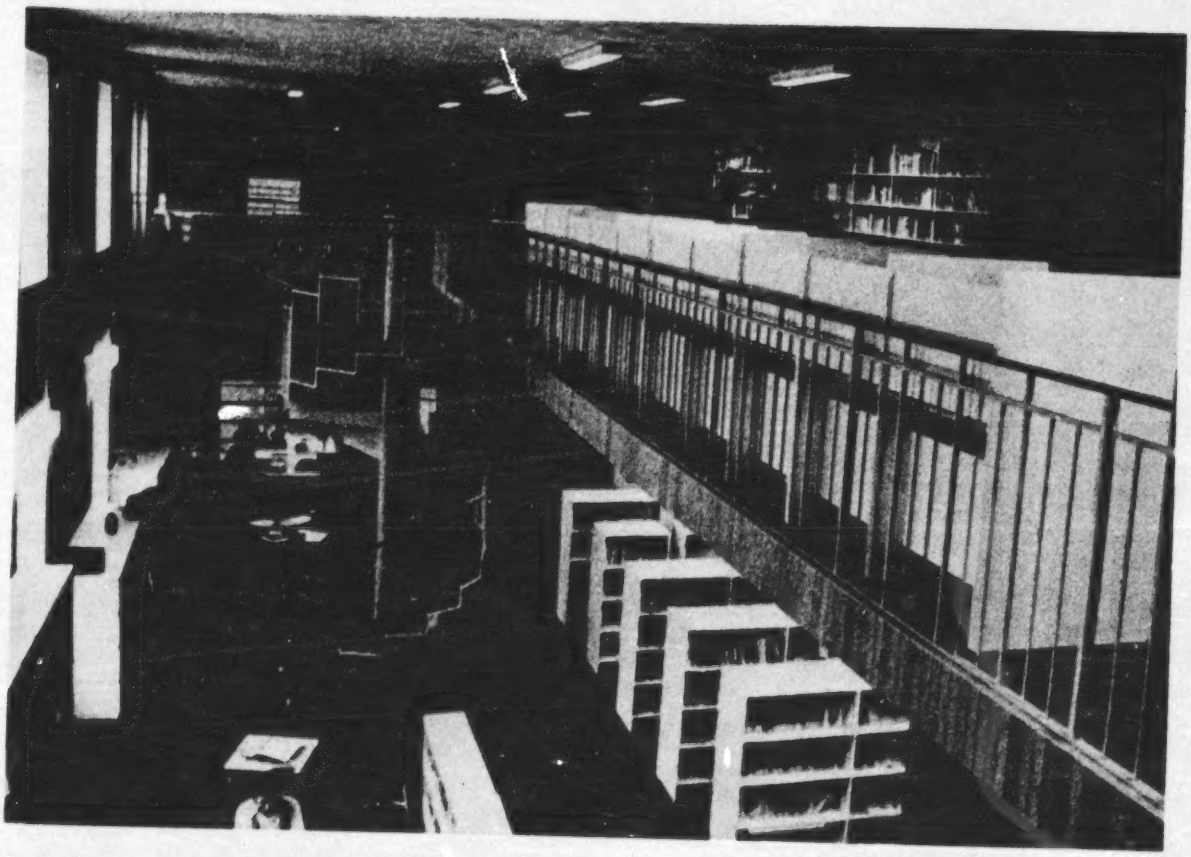
It is agreeable to think that this hall which for long had been used by pupils for private study periods, has now reverted to its original function, albeit in a contemporary form : in the 17th century it was the library of the Jesuit College. This project illustrates the efforts undertaken by the Ministry of Education since 1974 to develop resource centres.

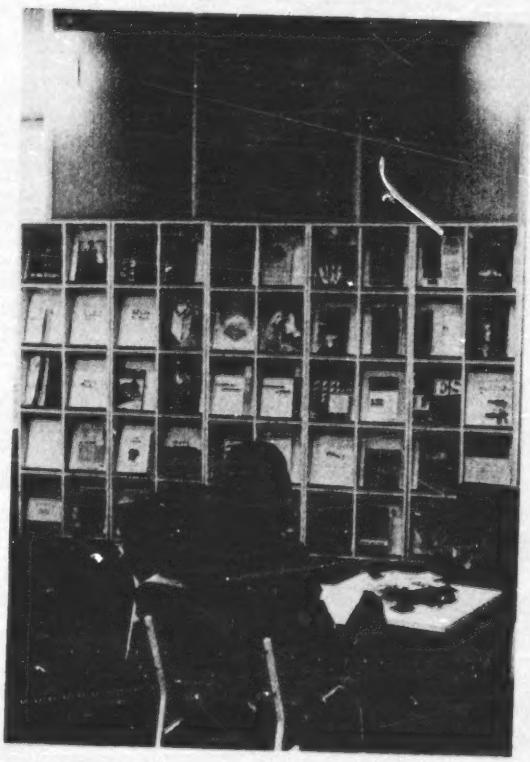
(From a statement by the Principal of the Stendhal Lycée)

Figure 5 THE RESOURCE CENTRE OF THE STENDHAL LYCEE
BEFORE AND AFTER TRANSFORMATION









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Issued by the OECD Programme on Educational Building (PEB), the leaflets aim at disseminating information on themes related to the activities of the Programme and on interesting examples of innovatory school building. They are particularly directed at administrators, local politicians, architects and educationists working in this field and it is hoped they will stimulate them in their search for new solutions to new problems. Leaflets are available in English and French. Requests for additional copies of available leaflets should be addressed directly to the PEB Secretariat, or alternatively, if from a participating country, to the national representative or correspondent to the Programme.

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